Climate scenarios in a transforming world

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Relevance of models for climate policy

Bloomberg Green

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Energy & Science

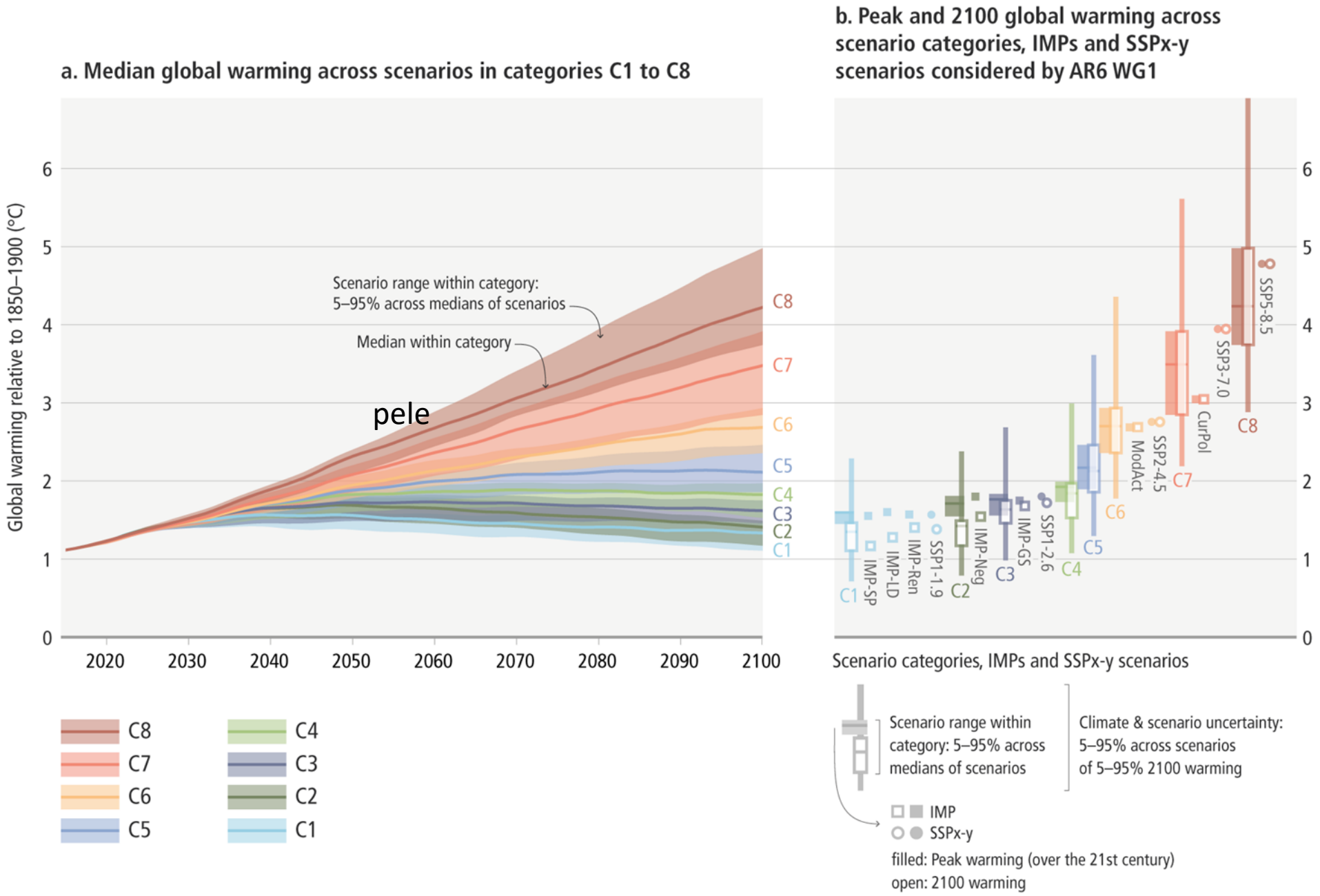
The World Is Moving Toward Net Zero Because of a Single Sentence

Like most of the Intergovernmental Panel on Climate Change's 2018 report, it's clunky and full of jargon, but it's also one of the most influential ever written

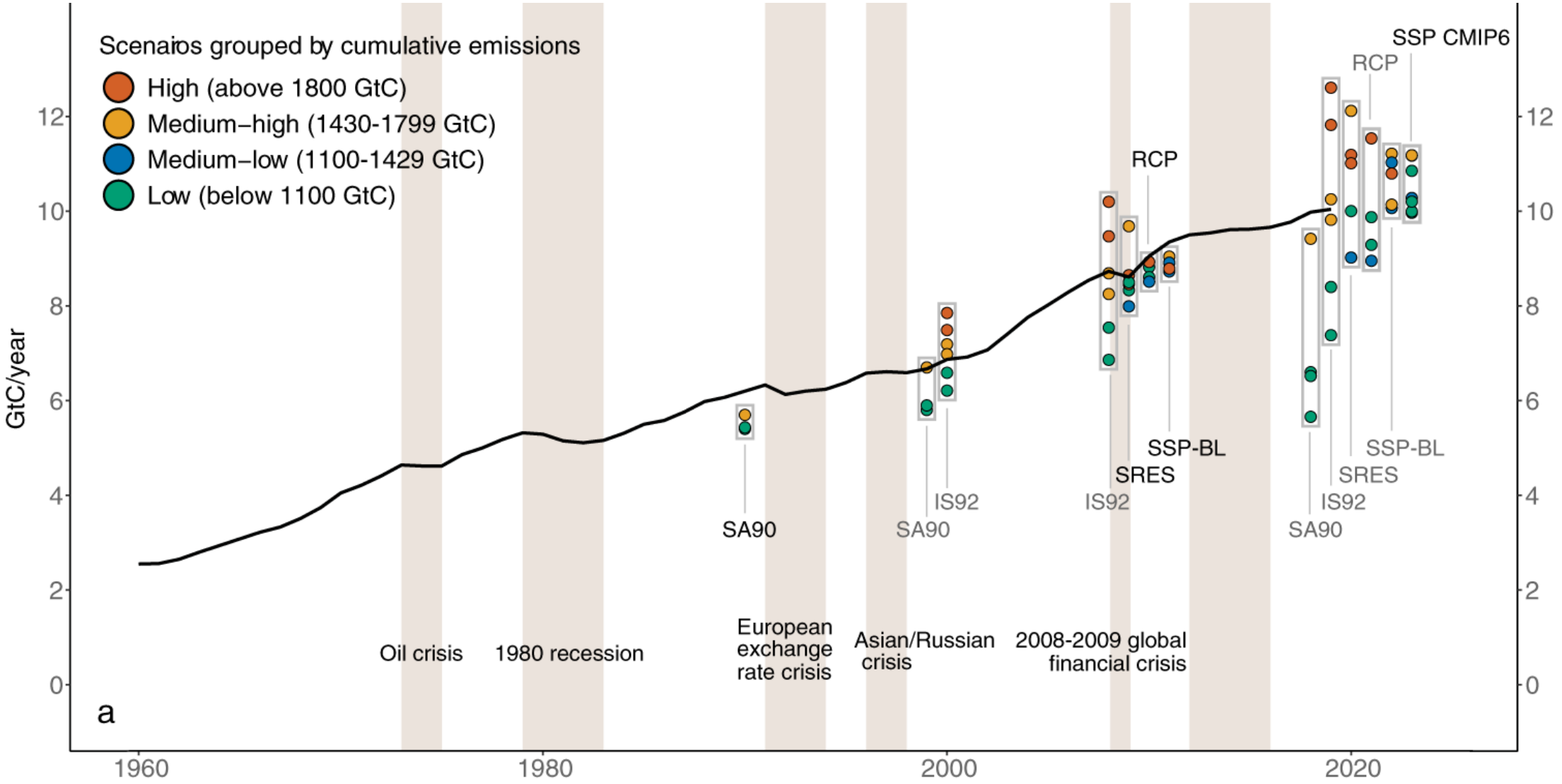
C. Emission Pathways and System Transitions Consistent with 1.5°C Global Warming

C.1 In model pathways with no or limited overshoot of 1.5°C, global net anthropogenic CO_2 emissions decline by about 45% from 2010 levels by 2030 (40–60% interquartile range), reaching net zero around 2050 (2045–2055 interquartile range). For limiting global warming to below 2°C[11] CO_2 emissions are projected to decline by about 25% by 2030 in most pathways (10–30% interquartile range) and reach net zero around 2070 (2065–2080 interquartile range). Non-CO_2 emissions in pathways that limit global warming to 1.5°C show deep reductions that are similar to those in pathways limiting warming to 2°C. (*high confidence*) (Figure SPM.3a) {2.1, 2.3, Table 2.4}

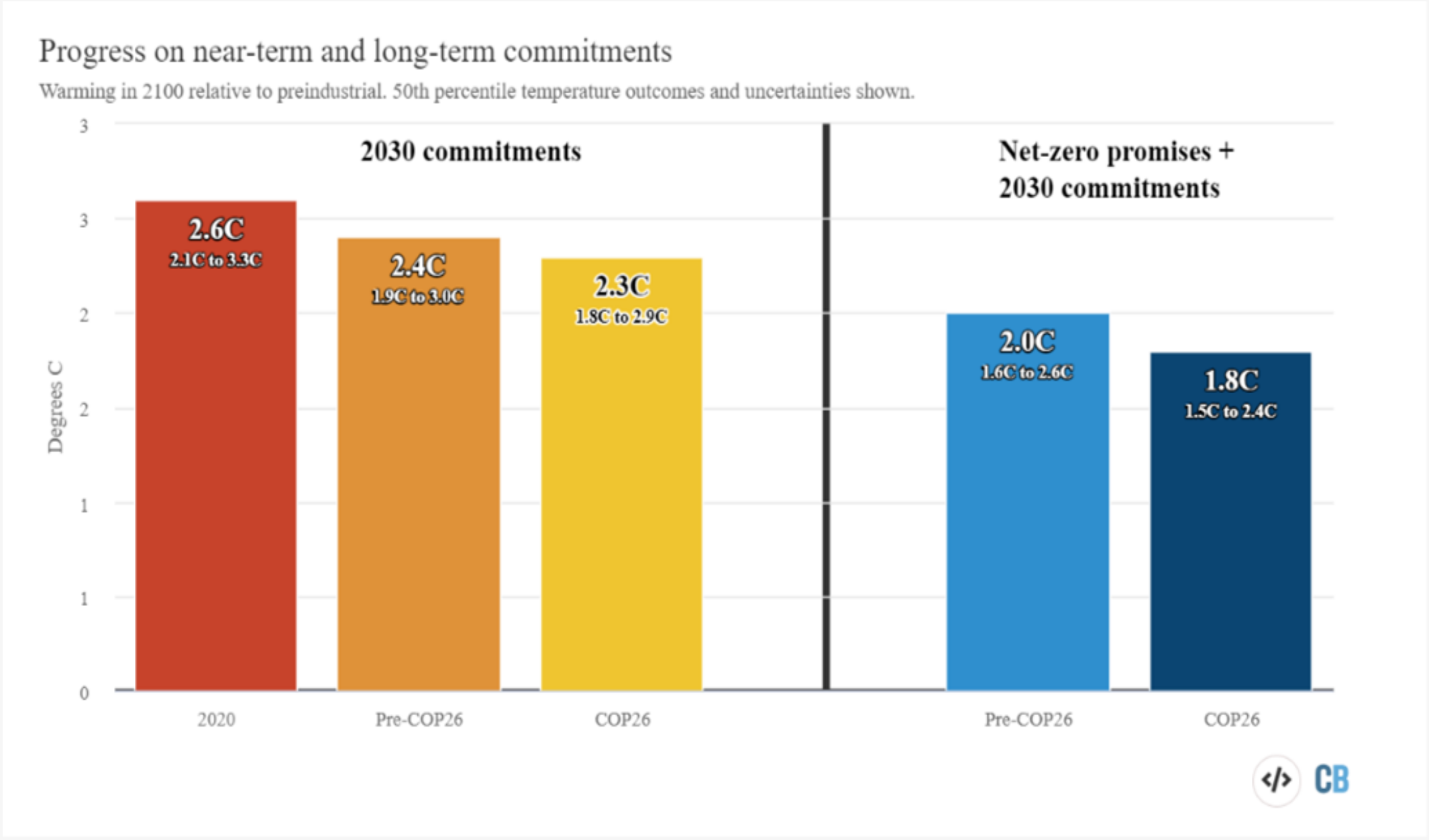
The range of assessed scenarios results in a range of 21st century projected global warming.



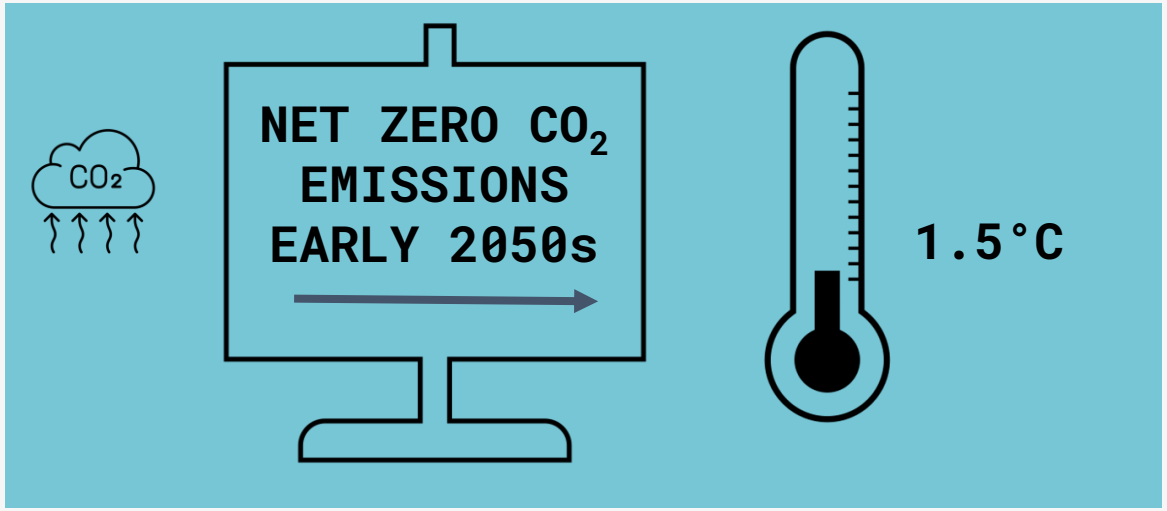
Emissions have tracked the middle-of-the-scenario ranges

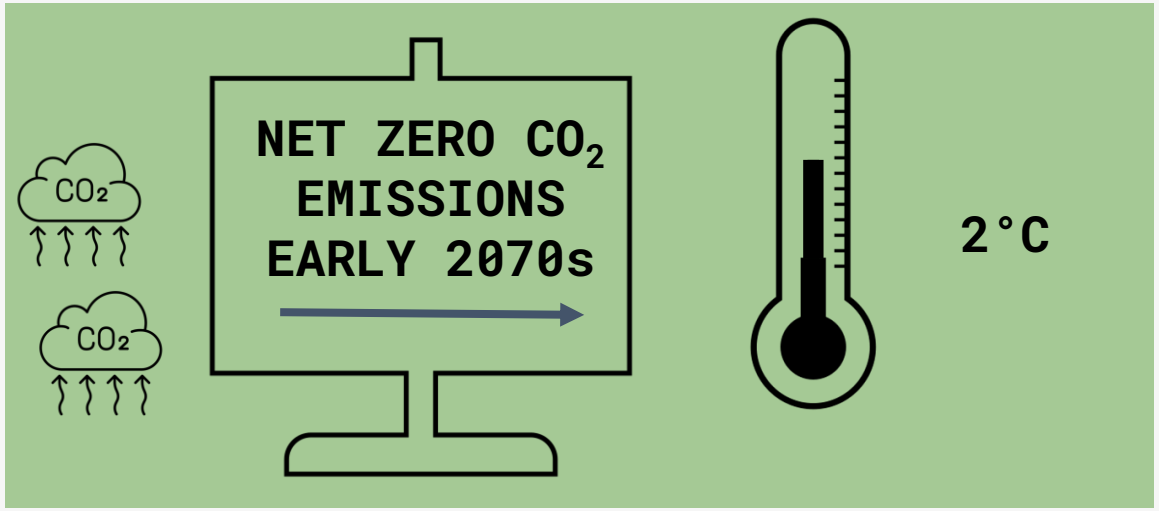


How hot will it be?

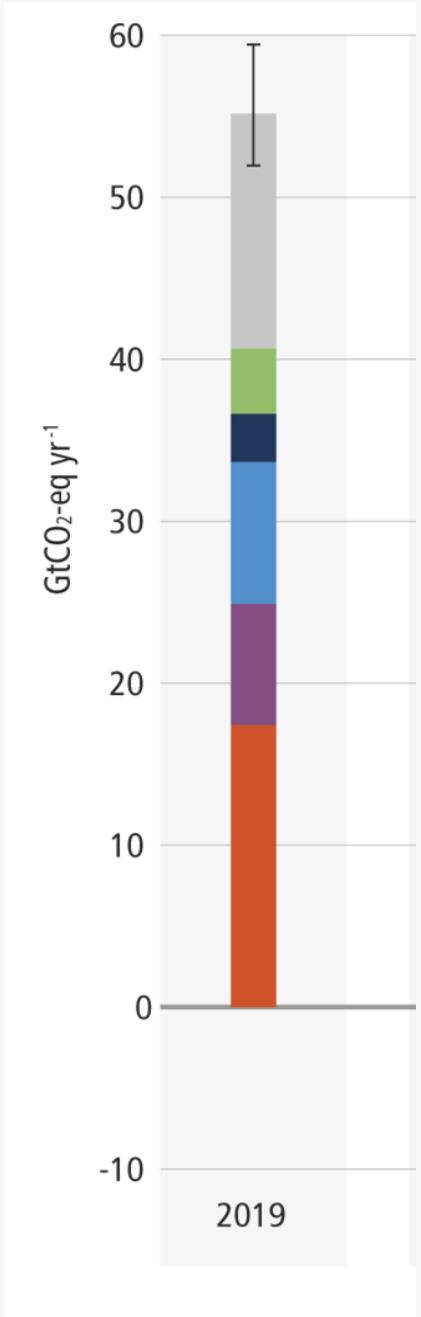


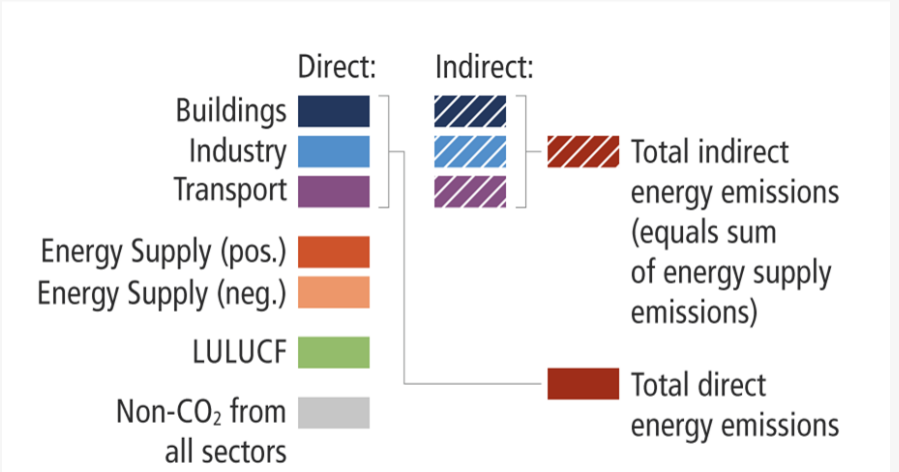
The temperature will STOP GROWING ONLY WHEN we reach net zero CO2



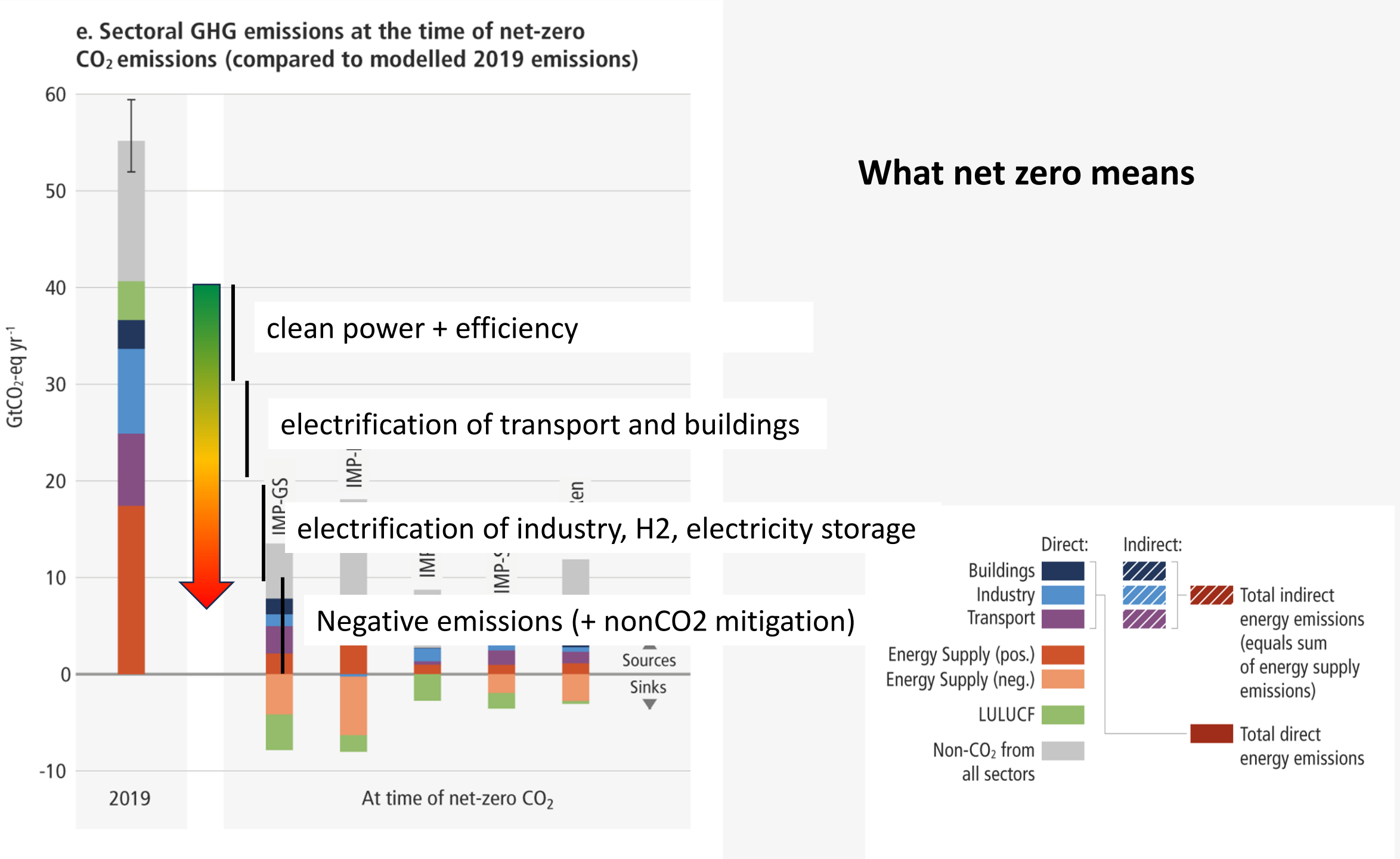


The road to net zero





What net zero means



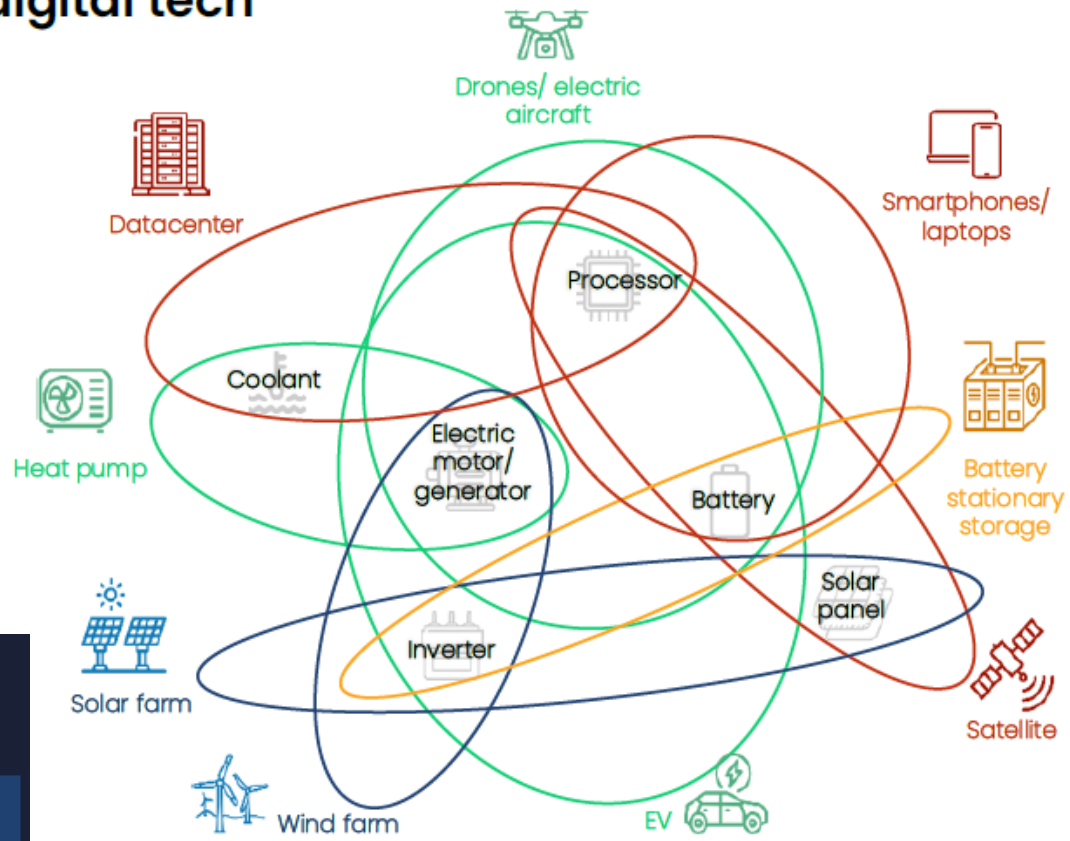
EMBER

The Electrotech Revolution

The shape of things to come

Electrotech is the child of digital tech

Electrotech is made of the same components as digital tech, and inherits its momentum



Chapter 4

Three fundamental drivers of change

Physics

Electrotech is more efficient than alternatives

Economics

Electrotech as a technology has learning curves and growth curves

Geopolitics

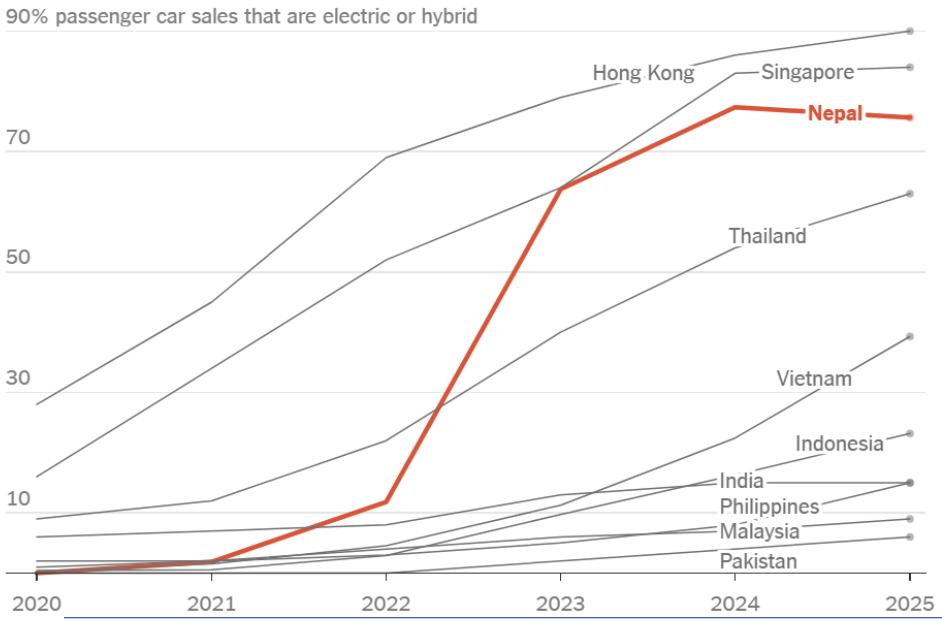
Electrotech is a key tool of energy security

The Country Where 76% of Cars Sold Are Electric

Subsidies, hydroelectricity and a manufacturing powerhouse neighbor are moving the cars into Nepal faster than almost anywhere else.

China's Neighbors Are Quickly Adopting Electric Vehicles

Cheap, imported battery-powered cars are taking over some markets in East Asia, while others lag behind.



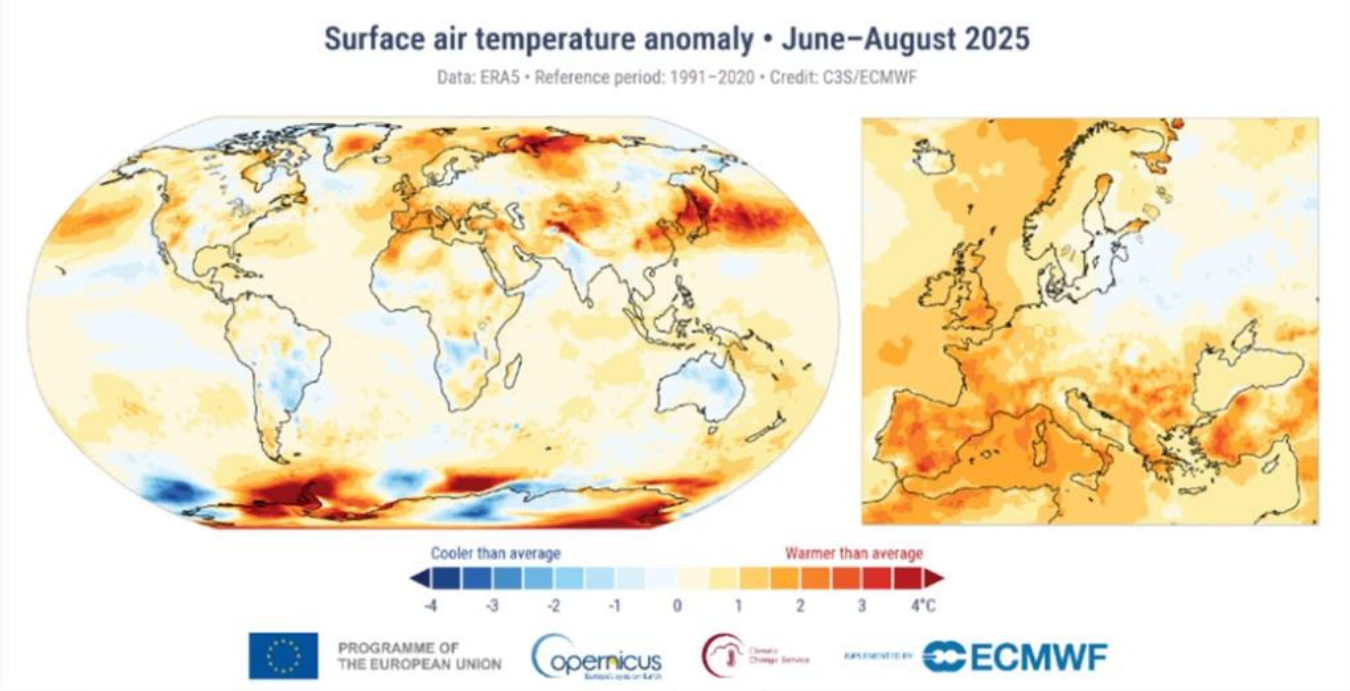
ESSAY

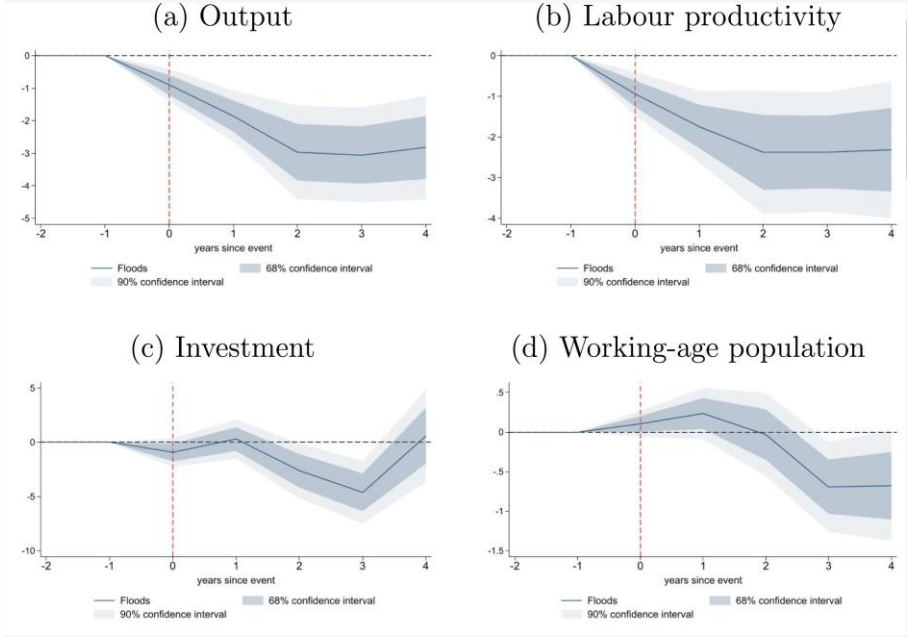
The Coming Ecological Cold War

Decarbonization isn't just about technology and markets—it's a geopolitical revolution.

SEPTEMBER 1, 2025, 7:00 AM

The economic and financial impacts of climate change

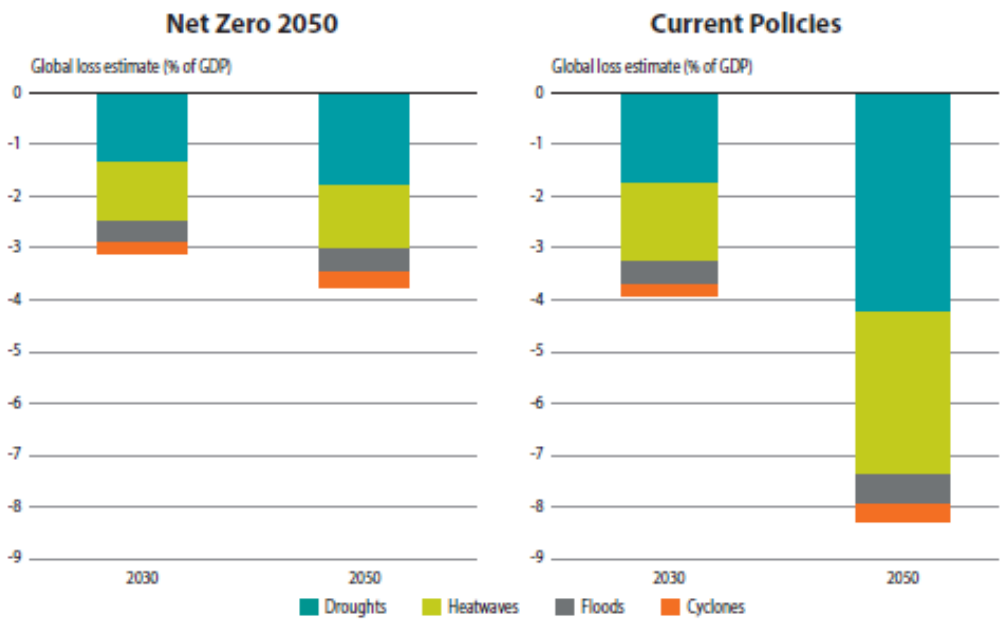




EUROPEAN CENTRAL BANK
EUROSYSTEM

- Scientific literature points to statistically significant impacts of climate change on the real economy (labour productivity, health, agriculture)
- This has repercussions for the financial economy (debt, financial stability)
- Climatic and socio-economic drivers are not yet clear
- Adaptation only partly offsets impacts and requires public money

NGFS
Central Banks and Supervisors
Network for Greening the Financial System



Note: Phase IV results for NiGEM using Climate Analytics input. Damages shown correspond to 90th damage percentile for droughts, heatwaves, and cyclones (floods are represented by a point estimate).

Article | Open access | Published: 17 April 2024

The economic commitment of climate change

Maximilian Kotz, Anders Levermann & Leonie Wenz

Nature **628**, 551–557 (2024) | Cite this article

06 November 2024 Editor's Note: Readers are alerted that the reliability of data and methodology presented in this manuscript is currently in question. Appropriate editorial action will be taken once this matter is resolved.

Matters Arising to this article was published on 13 August 2025

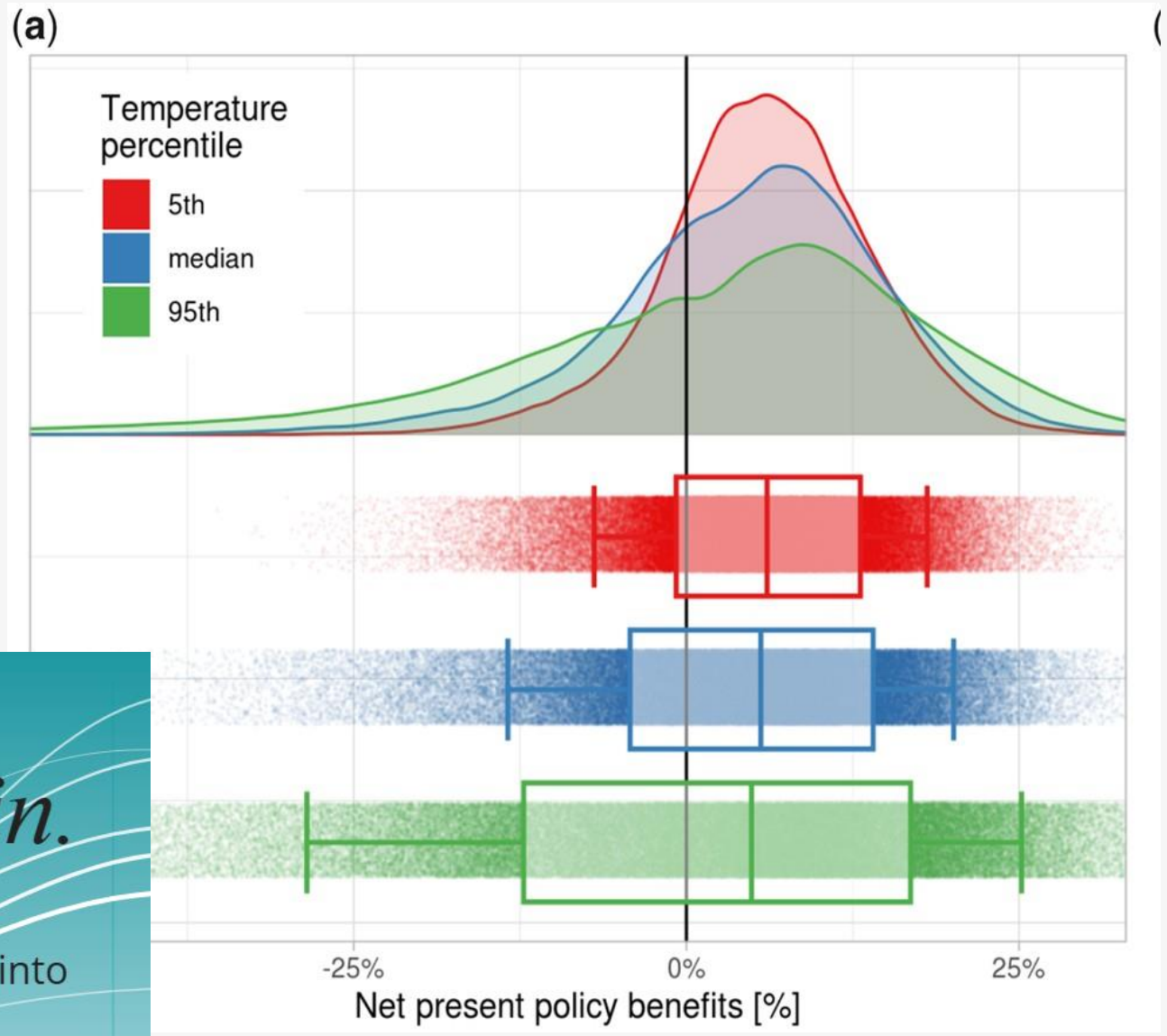
Matters Arising to this article was published on 06 August 2025

An Author Correction to this article was published on 24 June 2024

This article has been updated

Net-economic benefits of the climate transition (and their uncertainties)

The global economic benefit of limiting warming to 2°C is reported to exceed the cost of mitigation in most of the assessed literature (IPCC)



Take aways

1. Energy transition offers significant economic dividends by raising efficiency and leveraging digital tech, and as a result climate benefits too
2. Geopolitical rupture between fossil and electro-states
3. This is happening and is huge: rising emission scenarios unlikely
4. Even moderate warming can lead to significant, possibly long-lasting impacts on real and financial economy, though mechanisms are still to be understood
5. Embrace deep uncertainties on parameters, models, evolving reality